



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUL 09 2014

REPLY TO THE ATTENTION OF:
WU-16J

CERTIFIED MAIL 7009 1680 0000 7674 5390
RETURN RECEIPT REQUESTED

Mr. Dave Headapohl
Team Disposal Systems, L.L.C.
Post Office Box 1104
Kalkaska, Michigan 49646

**RE: Minor-Modified U.S. Environmental Protection Agency Underground Injection
Control Permit Numbers MI-055-2D-C034 and MI-055-2D-C013 in Grand Traverse
County, Michigan and MI-101-2D-C013 in Manistee County, Michigan**

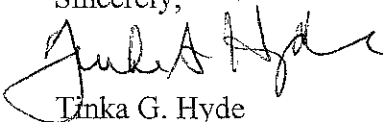
Dear Mr. Headapohl:

The final minor-modified pages for the permits referenced above are enclosed. They supersede the correlative pages of the existing permits for these wells. Pursuant to Title 40 of the Code of Federal Regulations Section 144.41(e), these permits are modified as follows:

<u>Page / Permit Condition</u>	<u>Modification</u>
Page 1	Effective date of the modification
Attachment D/List of Approved Sources	Add Source Number 123 – Mecosta Albers 1-23A

This action constitutes issuance of three minor-modified permits which become effective on the date specified in the permit. If you have any questions, please contact Janette E. Hansen by phone at (312) 886-0241 or by email to hansen.janette@epa.gov.

Sincerely,


Tinka G. Hyde
Director, Water Division

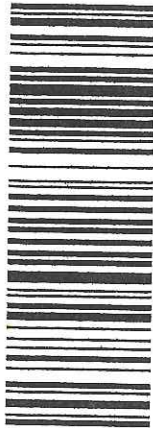
Enclosures

cc: Mark Snow, Michigan Dept. of Environmental Quality/ with copy
Ray Vugrinovich, Michigan Dept. of Environmental Quality/ with copy

7009 1680 0000 7674 5390

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT
OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

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Sent To **Dave Headapohl; Team Disp.**
Street, Apt. No.,
or PO Box No. **PO Box 1104**
City, State, ZIP+4 **Kalkaska, MI 49646**

PS Form 3800, August 2006

See Reverse for Instructions



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CHICAGO, IL 60604-3590

Page 1 of 14

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL MINOR PERMIT MODIFICATION:
CLASS II COMMERCIAL**

Permit Number: MI-055-2D-C013

Facility Name: State Blair Ryder #2-15

Pursuant to the provisions of the Safe Drinking Water Act, as amended (42 U.S.C. 300f et seq., commonly known as the SDWA) and implementing regulations promulgated by the United States Environmental Protection Agency at Parts 124, 144, 146 and 147 of Title 40 of the Code of Federal Regulations (40 C.F.R.),

Team Disposal Systems, L.L.C. of Kalkaska, Michigan

is hereby authorized to operate an existing injection well located in Michigan, Grand Traverse County, T26N, R11W, Section 15, 1/4 Section SW, for injection into the Traverse Limestone at depths between 1517 and 1548 feet, upon the express condition that the permittee meet the restrictions set forth herein.

The purpose of the injection is for commercial disposal of fluids related to the production of oil and gas as approved by the Director.

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective.

This permit is a minor modification of an existing permit which was signed on January 21, 2003. This permit shall become effective on JUL 09 2014 and shall remain in full force and effect during the operating life of the well, unless this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 C.F.R. § 144.39, 144.40 and 144.41. This permit shall also remain in effect upon delegation of primary enforcement responsibility to the State of Michigan, unless that State chooses to adopt this permit as a State permit. This permit will be reviewed at least every five (5) years from the effective date specified above.

Signed and dated: July 9, 14

Tinka G. Hyde
Tinka G. Hyde
Director, Water Division

This permit contains 14 pages and Attachments A through D.

PART I**GENERAL PERMIT COMPLIANCE****A. EFFECT OF PERMIT**

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. The underground injection activity, otherwise authorized by this permit or rule, shall not allow the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any Primary Drinking Water Regulation pursuant to 40 CFR Part 142 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit or otherwise authorized by permit or rule is prohibited. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Compliance with the terms of this permit does not constitute a defense to any action brought under Section 1431 of the Safe Drinking Water Act (SDWA), or any other law governing protection of public health or the environment.

B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§144.39, 144.40, and 144.41. The filing of a request for a permit modification, revocation and reissuance, termination, or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and §144.5, any information submitted to the USEPA pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, USEPA may make the information available to the public without further notice.

If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information). Claims of confidentiality for the following information will be denied:

- (1) The name and address of the permittee; and,
- (2) Information which deals with the existence, absence or level of contaminants in drinking water.

E. DUTIES AND REQUIREMENTS

1. **Duty to Comply** - The permittee shall comply with all conditions of this permit, except to the extent and for the duration such non-compliance is authorized by an emergency permit pursuant to 40 CFR §144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and reissuance or modification.
2. **Penalties for Violations of Permit Conditions** - Any person who operates this well in violation of permit conditions is subject to civil penalties, fines, and other enforcement action under the SDWA and may be subject to such actions under the Resource Conservation and Recovery Act. Any person who willfully violates a permit condition is subject to criminal prosecution.
3. **Need to Halt or Reduce Activity not a Defense** - It shall not be a defense for a permittee in an enforcement action to state that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate** - The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.
5. **Proper Operation and Maintenance** - The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.
6. **Duty to Provide Information** - The permittee shall furnish to the Director, within thirty (30) days, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required by this permit to be retained.

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7. **Inspection and Entry** - The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
- (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this permit;
 - (b) Have access to and copy, at reasonable times, any records that must be retained under the conditions of this permit;
 - (c) Inspect, at reasonable times, any facilities, equipment (including monitoring equipment), practices, or operations, regulated or required under this permit; and
 - (d) Sample or monitor the injected fluids, at reasonable times, for the purposes of assuring permit compliance, or as otherwise authorized by the SDWA, at any location.

8. **Records**

- (a) The permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all records required by this permit, for a period of at least three (3) years from the date of the sample, measurement or report. The permittee shall also maintain records of all data required to complete this permit application and any supplemental information submitted under 40 CFR §§144.31 and 144.51. These periods may be extended by request of the Director at any time by written notice to the permittee.
- (b) The permittee shall retain records concerning the nature and composition of all injected fluids until three (3) years after the completion of plugging and abandonment in accordance with the plugging and abandonment plan, contained in Part III(B) of this permit. The owner or operator shall continue to retain the records after the three (3) year retention period unless he delivers the records to the Regional Administrator or obtains written approval from the Regional Administrator to discard the records.
- (c) Records of monitoring information shall include:
 - (i) The date, exact place, and the time of sampling or measurements;
 - (ii) The individual(s) who performed the sampling or measurements;
 - (iii) A precise description of both sampling methodology and the handling of samples;

- (iv) The date(s) analyses were performed;
- (v) The individual(s) who performed the analyses;
- (vi) The analytical techniques or methods used; and,
- (vii) The results of such analyses.

9. **Notification Requirements**

- (a) **Planned Changes** - The permittee shall notify and obtain the Director's approval at least thirty (30) days prior to any planned physical alterations or additions to the permitted facility, or changes in the injection fluids. Within ten (10) days prior to injection, an analysis of new injection fluids shall be submitted to the Director for approval in accordance with Parts II(B) (2) and II(B) (3) of this permit.
- (b) **Anticipated Noncompliance** - The permittee shall give at least thirty (30) days advance notice to the Director for his/her approval of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- (c) **Transfer of Permits** - This permit is not transferrable to any person except after notice is sent to the Director at least thirty (30) days prior to transfer and the requirements of 40 CFR §144.38 have been met. The Director may require modification or revocation of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the SDWA.
- (d) **Compliance Schedules** - Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted to the Director no later than thirty (30) days following each schedule date.
- (e) **Twenty-Four Hour Reporting**
 - (i) The permittee shall report to the Director any noncompliance which may endanger health or the environment. This information shall be provided orally within twenty-four(24)hours from the time the permittee becomes aware of the circumstances, and shall include the following information:
 - (a) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or,
 - (b) Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between underground sources of drinking water.

- (ii) A written submission shall also be provided as soon as possible but no later than five (5) days from the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- (f) **Other Noncompliance** - All other instances of noncompliance shall also be reported by the permittee in accordance with Part I(E) (9) (e) (i) and (ii) of this permit.
- (g) **Other Information** - If or when the permittee becomes aware that the permittee failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Director, the permittee shall promptly submit such facts or corrected information in accordance with 40 CFR §144.51(1) (8).
- (h) **Report on Permit Review** - Within thirty (30) days of receipt of the final issued permit, the permittee shall report to the Director that the permittee has read and is personally familiar with all terms and conditions of this permit.
- 10. **Signatory Requirements** - All reports or other information requested by the Director shall be signed and certified according to 40 CFR §144.32.
- 11. **Notice of Plugging and Abandonment** - The permittee shall notify the Director at least forty-five (45) days before conversion or abandonment of the well.
- 12. **Plugging and Abandonment** - The permittee shall plug and abandon the well as provided in the plugging and abandonment plan contained in Part III(B) of this permit. Plugging shall occur as soon as practicable after operation ceases but not later than two (2) years thereafter. During the period of non-operation, the well must be tested to ensure that it maintains mechanical integrity, unless the permittee fulfills the other requirements under 40 CFR §144.52(a) 6), prior to expiration of the two (2) year period. The permittee shall notify the Director of plugging and abandonment in accordance with the reporting procedures in Part I(E) (12) of this permit.

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13. **Financial Responsibility** - The permittee shall maintain financial responsibility and resources to plug and abandon the underground injection well in accordance with 40 CFR §144.52(a)(7) as provided in Attachment R of the administrative record corresponding to this permit action which is hereby incorporated by reference as if it appeared fully set forth herein. The permittee shall not substitute an alternative demonstration of financial responsibility from that which the Director has approved, unless the permittee has previously submitted evidence of that alternative demonstration to the Director and the Director has notified the permittee in writing that the alternative demonstration of financial responsibility is acceptable. The financial responsibility mechanism shall be updated periodically, upon request of the Director, except when Financial Statement Coverage is used as the financial mechanism, this coverage must be updated on an annual basis.
14. **Insolvency**
- (a) In the event of the bankruptcy of the trustee or issuing institution of the financial mechanism, or a suspension or revocation of the authority of the trustee institution to act as trustee or the institution issuing the financial mechanism to issue such an instrument, the permittee must submit an alternative demonstration of financial responsibility acceptable to the Director within sixty (60) days after such event. Failure to do so will result in the termination of this permit pursuant to 40 CFR §144.40(a)(1).
 - (b) An owner or operator must also notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within ten (10) business days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification if he/she is named as debtor, as required under the terms of the guarantee.
15. **Corrective Action**
- The permittee shall shut in the injection well whenever he/she or the USEPA determines that operation thereof may be causing upward fluid migration through the wellbore of any improperly plugged or unplugged well in the area of review and shall take such steps as he/she can to properly plug the offending well(s). Any operation of the well which may cause upward fluid migration from an improperly plugged or

unplugged well will be considered a violation of this permit. If the permittee or the USEPA determines that the permitted well is not in compliance with 40 CFR §146.8, the permittee will immediately shut in the well until such time as appropriate repairs can be effected and written approval to resume injection is given by the Director. In addition, the permittee shall not commence injection until any and all corrective action has been taken in accordance with any plan contained in Part III(C) of this permit and the requirements in Part I(E) (10) of this permit have been met.

16. **Mechanical Integrity**

- (a) The permittee must establish (prior to receiving authorization to inject), and shall maintain mechanical integrity of this well, in accordance with 40 CFR §146.8.
- (b) A demonstration of mechanical integrity, in accordance with 40 CFR §146.8, shall be performed at least every five (5) years from the date of the last approved demonstration. The permittee shall notify the Director of his/her intent to demonstrate mechanical integrity at least thirty (30) days prior to such demonstration.
- (c) The permittee shall demonstrate the mechanical integrity of the well by pressure testing whenever: (i) the tubing is removed from the well or replaced; (ii) the packer is reset; or, (iii) a loss of mechanical integrity occurs. Operation shall cease whenever one of the aforementioned conditions occurs and not resume until the Director gives approval to recommence injection.
- (d) The Director may, by written notice, require the permittee to demonstrate mechanical integrity at any time.
- (e) The permittee shall cause all gauges used in mechanical integrity demonstrations to be calibrated prior to the demonstration.

- (f) The permittee shall cease injection if a loss of mechanical integrity occurs or is discovered during a test, or a loss of mechanical integrity as defined by 40 CFR §146.8 becomes evident during operation. Operations shall not be resumed until the Director gives approval to recommence injection.
 - (g) The permittee shall notify the Director of the loss of mechanical integrity, in accordance with the reporting procedures in Parts II(B) (3) (d) and I(E) (9) (e) of this permit.
 - (h) The permittee shall report the result of a satisfactory mechanical integrity demonstration as provided in Part II(B) (3) (d) of this permit, except the first such result after Permit issuance, which shall be sent to the Permit Writer.
17. **Restriction on Injected Substances** - The permittee shall be restricted to the injection of oil field brines or those fluids used in the enhancement of oil and gas production as specified in 40 CFR §146.5(b). Further, no fluids other than those from sources noted in the administrative record and approved by the Director shall be injected.

PART II**WELL SPECIFIC CONDITIONS FOR UNDERGROUND INJECTION CONTROL PERMITS****A. CONSTRUCTION REQUIREMENTS**

1. **Siting** - Notwithstanding any other provision of this permit, the injection well shall inject only into a formation which is separated from any USDW by a confining zone that is free of known open faults or fractures within the area of the review.
2. **Casing and Cementing** - Injection wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement to be used in the construction of the well shall be as contained in Attachments L and M of the administrative record corresponding to this permit action which are hereby incorporated by reference as if they appeared fully set forth herein.
3. **Tubing and Packer Specifications** - Injection shall only take place through tubing with a packer set in the long string casing within or below the nearest cemented and impermeable confining system immediately above the injection zone. Tubing and packer specifications shall be as represented in engineering drawings contained in Attachments L and M of the administrative record corresponding to this permit action which are hereby incorporated by reference as if they appeared fully set forth herein. Any proposed changes shall be submitted by the permittee in accordance with Part I(E) (9) (a) and (b) of this permit.
4. **Wellhead Specifications** - For every injection well, the operator shall provide a female fitting, with a cutoff valve, to the tubing at the wellhead, so that the amount of injection pressure being used may be measured by a representative of the USEPA by attaching a gauge having a male fitting.
5. **Logs and Tests** - Upon approval of the surface casing and cementation records by the Director, any logs and tests noted in Part III of this permit shall be performed, unless already provided. Prior to commencement of injection, the permittee shall submit a descriptive report prepared by a knowledgeable log analyst interpreting the results of those logs and tests to the Director for approval along with the notice of completion required in Part I(E) (10) of this permit.
6. **Formation Data** - If not already provided, the permittee shall determine or calculate the following information concerning the injection formation and submit it to the Director for review and approval, prior to operation:

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- (a) Formation fluid pressure;
- (b) Fracture pressure; and,
- (c) Physical and chemical characteristics of the formation.

7. **Prohibition of Unauthorized Injection** - Any underground injection, except as authorized by permit or rule issued under the UIC program, is prohibited. The construction, including drilling, of any well required to have a permit is prohibited until the permit has been issued.

B. OPERATING, MONITORING AND REPORTING REQUIREMENTS

1. **Operating Requirements**

- (a) Beginning on the effective date of this permit, the permittee is authorized to operate the injection well, subject to the limitations and monitoring requirements set forth herein. The injection pressure and injected fluid shall be limited and monitored as specified in Parts I(E) (18) and III(A) of this permit.
- (b) Injection at a pressure which initiates fractures in the confining zone or causes the movement of injection or formation fluids into or between underground sources of drinking water is prohibited.
- (c) Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.
- (d) The annulus between the tubing and the long string casing shall be filled with a liquid designed to inhibit corrosion. The annulus liquid will be monitored in accordance with Parts II(B) (2) (d) and II(B) (3) (b) of this permit. Any specific annulus requirements are contained in Part III(A) of this permit.

2. **Monitoring Requirements**

- (a) Samples and measurements, taken for the purpose of monitoring as required in Part II(B) (3), shall be representative of the monitored activity. Grab samples shall be used to obtain a representative sample of the fluid to be analyzed. Part III(A) of this permit describes the sampling location and required parameters for injection fluid analysis. The permittee shall identify the types of tests and methods used to generate the monitoring data. The monitoring program shall conform to the one described in Part III(A) of this permit.

- (b) Analytical Methods - Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR §136.3 or in Appendix III of 40 CFR Part 261 or by other methods that have been approved by the Director.
 - (c) Injection Fluid Analysis - The nature of the injection fluids shall be monitored as specified in Part III(A) of this permit. An initial analysis of the injection fluid is contained in Attachment H of the administrative record corresponding to this permit action which is hereby incorporated by reference as if it appeared fully set forth herein. The Director may, by written notice require the permittee to sample and analyze the injected fluid at any time.
 - (d) Injection Pressure, Annulus Pressure, Annulus Liquid Loss, Flow Rate and Cumulative Volume - Injection pressure, annulus pressure, flow rate and cumulative volume shall be recorded at least weekly and shall be reported monthly as specified in Part III(A) of this permit. Annulus liquid loss shall be recorded at least quarterly and shall be reported in accordance with the provisions of Part II(B) (3) (b), as the volume of liquid added to the annulus to keep it filled in accordance with Part II(B) (1) (d). All gauges used in monitoring shall be calibrated in accordance with Part I(E) (17) (e) of this permit.
3. Reporting Requirements - Copies of the monitoring results and all other reports shall be submitted to the Director at the following address:
- U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604
Attn: UIC Branch, Direct Implementation (WU-16J)
- (a) Monthly Reports - Monitoring results obtained during each week shall be recorded on a form which has been signed and certified according to 40 CFR §44.32. The first report shall be postmarked no later than the 10th day of the month after authorization to inject has been granted. Thereafter, forms shall be submitted at the end of each month and shall be postmarked no later than the 10th day of the month following the reporting period. This report shall include the weekly measurements of injection pressure, annulus pressure, flow rate and cumulative volume as required in Parts II(B) (2) (d) and III(A) of this permit.

- (b) Quarterly Reports - Monitoring results obtained each quarter shall include the measurement of annulus liquid loss as required in Parts II(B) (2) (d) and III(A) of this permit. Reports shall be submitted at the end of each quarter and shall be postmarked no later than the 10th day of the first month of the following quarter.
- (c) Annual Reports - Monitoring results obtained each year shall include the measurements of injected fluid characteristics as required in Part III(A) of this permit. Reports shall be submitted at the end of each anniversary year and shall be postmarked no later than the 10th day of the first month of the following year.
- (d) Reports on Well Tests, Workovers, and Plugging and Abandonment - The applicant shall provide the Director with the following reports and test results within sixty (60) days of completion of the activity:
 - (i) Mechanical integrity tests, except tests which the well fails in which case twenty-four (24) hour reporting under Part I(9) (e) is applicable;
 - (ii) Logging or other test data;
 - (iii) Well workovers (using EPA Form 7520-12); and
 - (iv) Plugging and abandonment.

PART III**SPECIAL CONDITIONS**

These special conditions include, but are not limited to plans for maintaining correct operating procedures, monitoring conditions and reporting, as required by 40 CFR Parts 144 and 146. These plans are described in detail in the permittee's application for a permit, and the permittee is required to adhere to these plans as approved by the Director, as follows:

- A. OPERATING, MONITORING AND REPORTING REQUIREMENTS (ATTACHED)
- B. PLUGGING AND ABANDONMENT PLAN (ATTACHED)
- C. CORRECTIVE ACTION PLAN (ATTACHED)
- D. ADDITIONAL REQUIREMENTS (ATTACHED - IF REQUIRED)

OPERATING, MONITORING AND REPORTING REQUIREMENTS

<u>Characteristic</u>	<u>LIMITATION</u>	<u>MINIMUM</u>		<u>MINIMUM</u>
		<u>MONITORING</u>		<u>REPORTING</u>
		<u>REQUIREMENTS</u>		<u>REQUIREMENTS</u>
		<u>Freq.</u>	<u>Type</u>	<u>Freq.</u>
*Injection Pressure	312 psig (MAXIMUM)	weekly		monthly
Annulus Pressure		weekly		monthly
Flow Rate		weekly		monthly
Cumulative Volume		weekly		monthly
Annulus Liquid Loss		monthly		monthly
**Brine Manifest Records		quarterly		quarterly
***Chemical Composition of Injected Fluid		quarterly	grab	quarterly

SAMPLING LOCATION: Sampling will be taken at the wellhead.

*The limitation on wellhead pressure serves to prevent confining-formation fracturing. The maximum injection pressure is dependent upon depth and specific gravity of the injected fluid. This limitation was calculated using the following formula: $[(0.8 \text{ psi/ft} - (0.433 \text{ psi/ft})(\text{specific gravity})) \times \text{depth}] - 14.7 \text{ psi}$. The Traverse Limestone at 1517 feet was used as the depth and a specific gravity of 1.35 was used for the injected fluid.

**Brine manifest records must be either a copy of the State Report for commercial haulers or the permittee's records of deliveries by the various haulers. The brine manifest records must be submitted quarterly in accordance with Part II(B)(3)(b) of this permit and shall contain all the information specified therein.

***Chemical composition analysis shall include, but not be limited to, the following: Sodium, Calcium, Magnesium, Barium, Total Iron, Chloride, Sulfate, Carbonate, Bicarbonate, Sulfide, Total Dissolved Solids, pH, Resistivity (ohm-meters @ 75°F), and Specific Gravity.



UN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Y

MI-055-2D-C013

PLUGGING AND ABANDONMENT PLAN

Page B-1 of 2

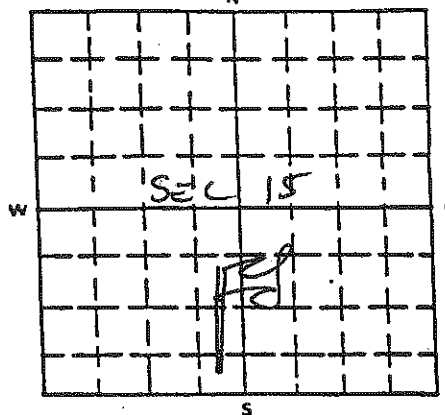
WELL NAME & NUMBER, FIELD NAME, LEASE NAME & NUMBER

STATE BLAIR RYDER 2-15 SWD

NAME, ADDRESS, & PHONE NUMBER OF OWNER/OPERATOR

Team Completions
P.O. Box 1088
Kalkaska, MI. 49646Locate Well And Outline Unit On
Section Plat — 640 Acres

N

STATE
MICOUNTY
Grand TraverseSTATE PERMIT NUMBER
33083

SURFACE LOCATION DESCRIPTION

SE-SE-SW, Sec. 15, T26N-R11W, Blair Township

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location 600 ft. From (N/S) South Line Of Quarter Section
And 460 ft. From (E/W) East Line Of Quarter Section

TYPE OF AUTHORIZATION

- ☒ Individual Permit
☐ Rule
☐ Area Permit

Number of Wells

In Area Permit _____

U.S. EPA Permit Number MI-055-2D-0013

WELL
ACTIVITY

- ☐ Class I
☐ Hazardous
☐ Nonhazardous
☒ Class II
☒ Brine Disposal
☐ Enhanced Recovery
☐ Hydrocarbon Storage
☐ Class III
☐ Class V

CASING/TUBING/CEMENT RECORD AFTER PLUGGING AND ABANDONMENT

Size	WT (lb./ft.) TUB./CAS.	Original Annulus (CSG) (ft.)	CSG to be Left in Well (ft.)	Total Slug (cu ft.)	Slurry Cement Used	Type
16"	Conductor	68'	68'	Driven	Driven	C---
11 3/4"	42#	720'	720'	15"	450	CL A
5 1/2"	15.5#	2020'	2020'	10 5/8"	750'	CL A

METHOD OF EMPLACEMENT
OF CEMENT PLUGS

- ☒ The Balance Method
☐ The Dump Bailer Method
☐ The Two Plug Method
☐ Other, Explain

CEMENT TO PLUG AND ABANDON DATA:

	Plug # 1	Plug # 2	Plug # 3	Plug #	Plug #	Plug #	Plug #
Size of Hole or Pipe in Which Plug Will Be Placed (inches)	5 1/2"	5 1/2"	5 1/2"				
Calculated Top of Plug (ft.)	1300'	550'	0'				
Measured Top of Plug (ft.)	N/A	N/A	N/A				
Depth to Bottom of Plug (ft.)	1400'	780'	100'				
Sacks of Cement to be Used	11	26	11				
Slurry Volume to be Used (cu ft.)	13	31	13				
Slurry Weight (lb./gal.)	15.6	15.6	15.6				
Type of Cement, Spacer or Other Material Used	Class A	Class A	Class A				
Type of Preflush Used	None	None	None				

DESCRIPTION OF PLUGGING PROCEDURE

Pull tubing & Packer, Pick up cast iron bridge plug (5 1/2") & run in casing. Set bridge plug @1400' and place 11 sx Class A cement on bridge plug to a depth of 1300'. Pull up hole with tubing & place 26 sx Class A cement from 780' to 550'. Pull up hole and set a 11 sx cement plug from 100' to surface. Cut casing off 4' below ground level and weld 1/2" steel plate on stub. Back fill and restore location back to original grades.

ESTIMATED COST OF PLUGGING AND ABANDONMENT

Cement	\$ 3050.00	Cast Iron Bridge Plug	\$ 1000.00
Logging	\$	Cement Retainer	\$
Rig or Pulling Unit	\$ 2935.00	Miscellaneous	\$ 1750.00

CERTIFICATION

I certify under the penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)

Don Tinker, President

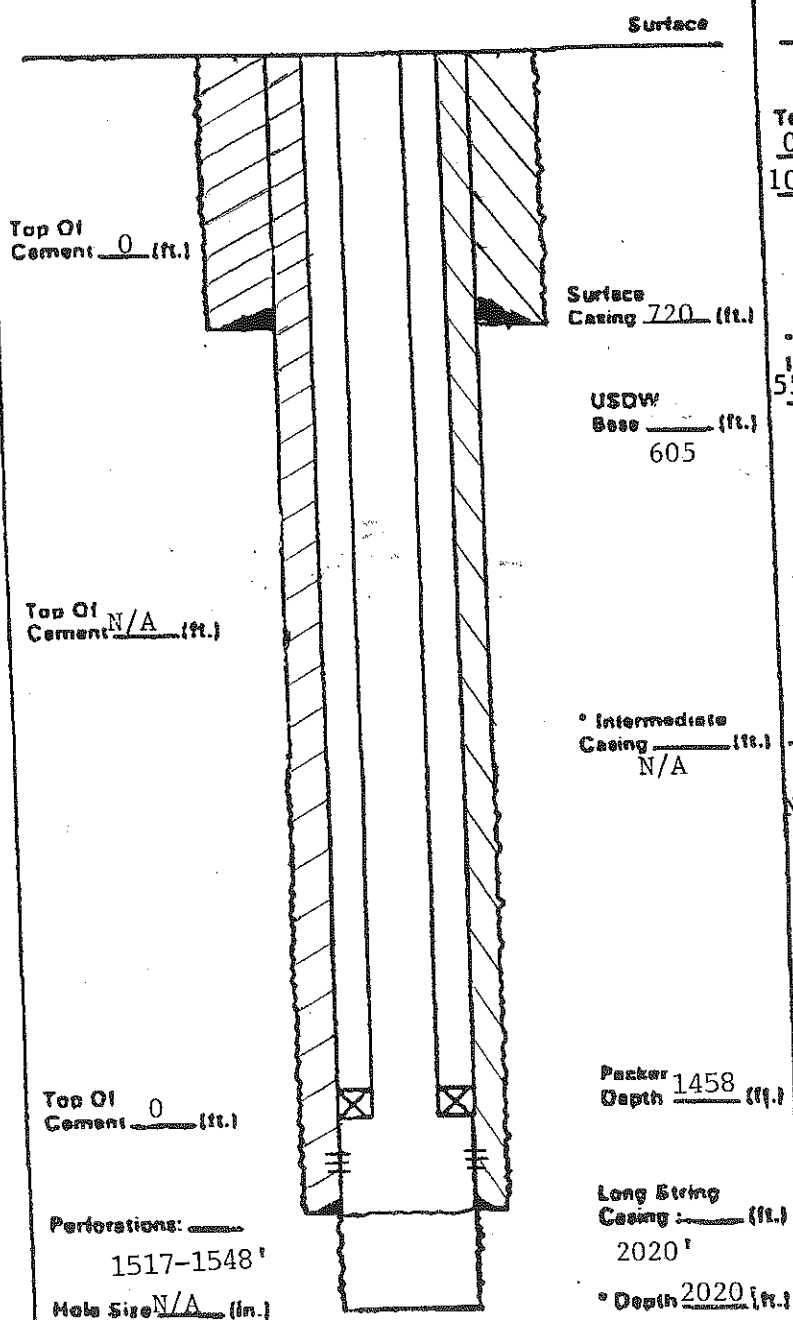
SIGNATURE

DATE SIGNED

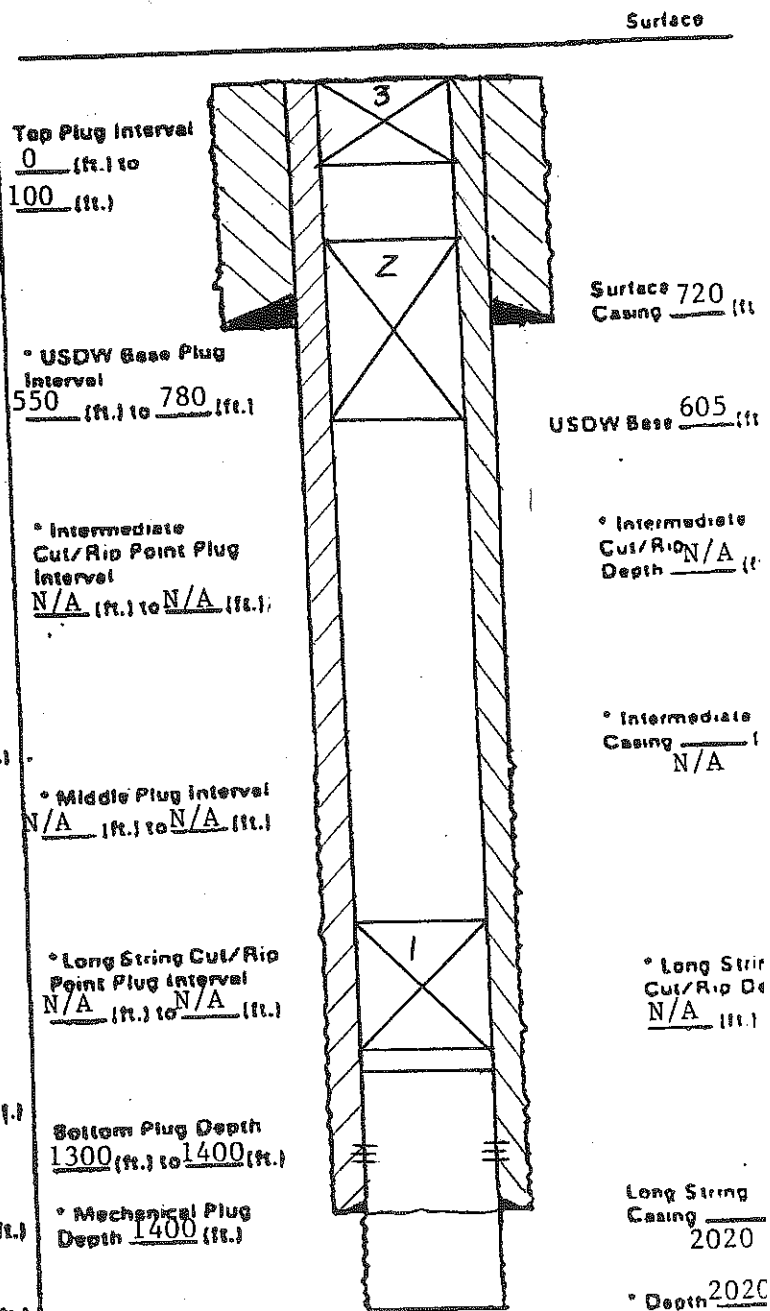
7-16-02

STATE BLAIR RYDER 2-15 SWD

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** Add Any Additional Information
* May Not Apply



** Add Any Additional Information
* May Not Apply

LIST OF ALL OPEN AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED

Specify Open Hole/Perforations/Varied Casing	From	To	Formation Name
Perforations	1517'	1548'	Traverse Lime

CORRECTIVE ACTION PLAN

No corrective action is required at this time.

List of Presently Approved Sources

Presently there are 123 approved sources of oil field brine to be disposed of into the following Team Disposal Systems L.L.C. wells:

State Blair Ryder 2-15

Permit #MI-055-2D-C013

Weber #4-8

Permit #MI-055-2D-C034

Fauble-Meyers 1-3

Permit #MI-101-2D-C013

They are identified below by field names, location and formation names. Future sources, as approved by the Director, will be added to this Part III(D) of the permit. A complete chemical analysis of each source of brine that makes up the injection fluid is included in Attachment H of the permit file. No fluids other than those from sources noted in Part III(D) of the permit shall be injected.

No.	Field Name	Location	Formation Name
1	Kalkaska 17-27N-07W	Section 17-T27N-R7W	Niagaran
2	Blue Lake 05-28N-05W	Section 05-T28N-R5W	Niagaran
3	East Bay 05-26N-10W	Section 05-T26N-R10W	Niagaran
4	Kalkaska 3	Section 03-T27N-R7W	Niagaran
5	Colfax 31-25N-13W	Section 31-T25N-R12W	Niagaran
6	East Bay 02A-26N-10W	Section 02-T26N-R10W	Niagaran
7	Bear Lake 02A-23N-14W	Section 02-T23N-R15W	Niagaran
8	Mentor	Section 32-T25N-R3E	St. Peter & P.D.C.
9	Mentor 34	Section 34-T25N-R3E	St. Peter & P.D.C.
10	Springdale 16	Section 16-T24N-R14W	Antrim
11	Green Lake 12	Section 12-T26N-R12W	Antrim
12	Grant 3	Section 03-T25N-R12W	Niagaran
13	Blue Lake 04-28N-05W	Section 04-T28N-R5W	Niagaran
14	Union 3	Section 03-T26N-R9W	Niagaran
15	Big Creek 24	Section 24-T25N-R2E	St. Peter & P.D.C.
16	Rapid River 27	Section 27-T28N-R7W	Niagaran
17	Cold Springs 30	Section 30-T28N-R6W	Niagaran
18	Grant 04-25N-12W	Section 04-T25N-R12W	Niagaran
		Section 09-T25N-R12W	Niagaran
19	East Bay 16-26N-10W	Section 16-T26N-R10W	Niagaran
20	East Bay 14	Section 14-T26N-R10W	Niagaran
21	Kalkaska 10-27N-08W	Section 10-T27N-R8W	Niagaran
22	Kalkaska	Section 16-T27N-R8W	Niagaran
23	Kalkaska 19-27N-08W	Section 19-T27N-R8W	Niagaran
24	Paradise 20A-26N-10W	Section 20-T26N-R10W	Niagaran
25	MacDonald 10	Section 10-T26N-R10W	Niagaran
26	East Bay 05-26N-10W	Section 05-T28N-R5W	Niagaran
27	Blue Lake 18-28N-05W	Section 18-T28N-R5W	Niagaran
28	Coldsprings 12-27N-06W	Section 12-T27N-R6W	Niagaran
29	Excelsior 06-27N-07W	Section 6-T27N-R7W	Niagaran
30	Bear Lake 24-23N-15W	Section 18-T23N-R15W	Niagaran
31	Manistee 12/12A-22N-16W	Section 12-T22N-R16W	Niagaran

32	East Bay 10-26N-10W	Section 10-T26N-R10W	Niagaran
33	Thompson Corners	Section 25-T15N-R15W	Clinton
34	East Bay 09-26N-10W	Section 09-T26N-R10W	Niagaran
35	Blair 11-26N-11W	Section 11-T26N-R11W	Niagaran
36	East Bay 07-26N-10W	Section 07-T26N-R10W	Niagaran
37	Mayfield 09-25N-11W	Section 09-T25N-R11W	Niagaran
38	Bear Lake 09A-23N-15W	Section 09-T23N-R15W	Niagaran
39	Springdale 16-24N-14W	Section 16-T24N-R14W	Niagaran
40	Hayes 11-29N-04W	Section 11-T29N-R04W	Niagaran
41	Wexford 01A-24N-12W	Section 01-T24N-R12W	Niagaran
42	Brown 07-22N-15W	Section 07-T22N-R15W	Niagaran
43	Cleon 19B-24N-13W	Section 19-T24N-R13W	Niagaran
44	Paradise 22-26N-10W	Section 22-T26N-R10W	Niagaran
45	Hayes 32-27N-04W	Section 32-T29N-R4W	Niagaran
46	Otsego Lake 24-29N-03W	Section 24-T29N-R3W	Niagaran
47	Whitewater 32-27N-09W	Section 32-T27N-R9W	Niagaran
48	Bear Lake 20-23N-15W	Section 20-T23N-R15W	Niagaran
49	East Bay 15-26N-10W	Section 15-T26N-R10W	Niagaran
50	East Bay 11-26N-10W	Section 11-T26N-R10W	Niagaran
51	East Bay 16-26N-10W	Section 16-T26N-R10W	Niagaran
52	Bear Lake 33	Section 33-T23N-R15W	Niagaran
53	Manistee 12/12A-22N-16W	Section 07-T22N-R15W	Niagaran
54	Bear Lake 25A-23N-15W	Section 19-T23N-R15W	Niagaran
		Section 26-T23N-R15W	Niagaran
55	Kalkaska 11-27N-08W	Section 11-T27N-R8W	Niagaran
56	Kalkaska 20/20A-27N-08W	Section 20-T27N-R8W	Niagaran
57	Kalkaska 21-27N-08W	Section 21/22-T27N-R08W	Niagaran
58	Kalkaska 30-27N-08W	Section 30-T27N-R8W	Niagaran
59	Grant 29A-25N-15W	Section 29-T25N-R12W	Niagaran
60	Mancelona 33-29N-05W	Section 04-T28N-R5W	Niagaran
61	Grant 10-25N-12W	Section 10-T25N-R12W	Niagaran
62	Bear Lake 01-23N-15W	Section 01-T23N-R15W	Niagaran
63	Bear Lake 25-23N-15W	Section 25-T26N-R11W	Niagaran
64	Blair 28-26N-11W	Section 29-T26N-R11W	Niagaran
65	Enterprise	Section 11-T23N-R5W	Richfield & P.D.C.
66	Filer 33-21N-17W	Section 33-T32N-R17W	Niagaran
67	Garfield Sec 08	Section 14/15-T25N-R6W	Richfield & P.D.C.
68	Manistee 25-22N-17W	Section 25-T22N-R17W	Niagaran
		Section 30-T22N-16W	
69	Norwich	Section 11-T24N-R5W	Richfield & P.D.C.
70	Springfield Sec 32	Section 32-T25N-R08W	P.D.C.
71	Big Creek	Section 8-T25N-R2E	P.D.C.
72	Betts Creek	Section 1-T14N-R11W	Niagaran
73	Rapid River Township Regional Gas	Section 5-T28N-R07W	Niagaran
74	Blue Lake 01-28N-05W	Section 6-T28N-R04W	Niagaran
75	Springdale Township Regional Oil	Section 15-T24N-R14W	Guelph (Niagaran)
		Section 16-T24N-14W	
76	Blair 34A-26N-11W	Section 34-T26N-11W	Brown Niagaran
77	Grant 16-25N-12W	Section 16-T25N-R12W	Niagaran

78	Frederic 02-28N-04W	Section 2-T28N-R4W	Niagaran
79	Blue Lake 12A-28N-05W	Section 12-28N-R5W	Niagaran
80	Coldsprings 22-28N-06W	Section 23-T28N-R6W	Niagaran
81	Grant Township Regional Oil	Section 19-T25N-R12W	Guelph (Niagaran)
		Section 20-T25N-R12W	
82	Grant 34A-25N-12W	Section 34-T25N-R12W	Niagaran
83	Wexford 1-6 CPF	Section 5/6-T24N-R12W	Niagaran
84	Manistee 08-21N-16W	Section 8-T21N-R16W	Niagaran
85	Grant 34	Section 34-T25N-R12W	Niagaran
86	Bear Lake 15	Section 15-T23N-R12W	Niagaran
87	Yates 22 PDC	Section 27-T17N-R12W	P.D.C.
88	Frederic 12-28N-04W	Section 12-T28N-R4W	Brown Niagaran
89	Santiago	Section 23-T20N-R6E	P.D.C.
90	Reno	Section 27-T22N-R5E	P.D.C.
91	Mancelona 33A-29N-05W	Section 4-T28N-R5W	Niagaran
92	Whitewater 22-27N-09W	Section 22-T27N-R9W	Niagaran
93	Bear Lake 11A-23N-15W	Section 11-T23N-R15W	Niagaran
94	Maple Grove 02-23N-14W	Section 2-T23N-R14W	Niagaran
95	State Beaver Creek Plant 2	Section 21-T25N-R4W	various
96	Otsego County – Antrim	Section 11-T30N-R3W	Antrim
97	Manistee 36A-22N-17W	Section 26-T22N-R17W	Niagaran
98	Grant 31-25N-12W	Section 6-T24N-12W	Niagaran
99	Brown 05-22N-15W	Section 5-22N-15W	Niagaran
100	West Branch	Section 18-T22N-R2E	Amherstburg
		Section 26-T22N-R2E	Amherstburg
		Section 26-T22N-R2E	Detroit River
		Section 26-T22N-R2E	Richfield
101	Mayfield 10-25N-11W	Section 10-T25N-R11W	Niagaran
102	Union 18A-26N-09W	Section 18-T26N-R9W	Niagaran
103	Missaukee Co, Utica Collingwood	Section 3-T24N-R7W	Utica-Collingwood
104	Grant 16-25N-12W	Section 9-T25N-R12W	Niagaran
105	Mayfield 18	Section 18-T25N-R11W	Niagaran
106	Encana's Excelsior 1-13	Section 24 T27N R6W	Utica – Collingwood
107	Presidium Energy's Freeman Redding Facility Permit #3247	Section 33 T19N R6W	Dundee
108	Stony Lake Production's Schiller 1-10 HD1	Section 10 T13N – R18W	Traverse Group
109	Presidium Energy's Freeman Redding CPF	Section 33 T19N – R6W	Dundee
110	Encana's Koehler & Kendall 1-27	Section 33 T35N – R2W	Utica Collingwood
111	Encana's State Excelsior 1-25	Section 1 T26N – R1W	Collingwood
112	Schmude Oil Inc.'s Hadaway 1-2	Section 1 T22N – R16W	Niagaran
113	Springdale 32; St. Kuuttial 1-32	Section 32 T24N R14W	Niagaran
114	Manistee 17; Kot et al 1-18	Section 17 T22N R16W	Niagaran
115	Manistee 18 BGHL Invest. 1-18	Section 18 T22N R 18W	Niagaran
116	Pentwater; Bowen #1	Section 12 T16N R18W	Traverse Group

P.D.C. = Prairie du Chien

117	Maple Grove; Vredenburg #1	Section 7 T23N -R14W	Niagaran
118	Wellmaster HCMA 1-16C	Section 16 T 2N R 7E	Brown Niagaran
119	Summerfield	Section 18 T 7S R 6E	Trenton Fm
	Trendwell Energy Secor D4-18		
120	Six Lakes Field	Section 10 T12N R 7W	Michigan Stray
	MichCon's Six Lakes 7-438HD1		
121	Mayfield.	Section 4 T25N R 11W	Niagaran
	R Cubed's Wagner Etal 1-4)		
122	Thompson Corners	Section 25 T15N R 15W	Clinton
	Black River Oil's Brown 1-25A		
123	Stanwood	Section 23 T14N R 10W	Prairie Du Chen
	St Mecosta Albers 1-23A		